

Claims

- [c1] A power control management system comprising:
 - at least one intelligent end device (IED);
 - a control computer comprising an Ethernet server configured to create and encapsulate messages intended for said IEDs, in an industry standard format; and
 - an Ethernet gateway configured to communicate with said server and transmit messages to said IEDs.
 - [c2] A power control system according to Claim 1 wherein said server further configured to encapsulate messages with a TCP/IP Ethernet header and footer.
 - [c3] A power control system according to Claim 2 wherein said gateway further configured to extract the TCP/IP Ethernet header and footer from the encapsulated messages.
 - [c4] A power control system according to Claim 3 wherein said gateway further configured to transmit messages to at least one IED.
 - [c5] A power control system according to Claim 1 wherein said gateway further configured to encapsulate messages returned from said IEDs with an industry standard header and footer for transmission to said Ethernet server.
 - [c6] A power control management system according to Claim 5 wherein the messages are encapsulated with a TCP/IP Ethernet header and footer.
 - [c7] A power control management system according to Claim 1 wherein said server is further configured to act as a communications server for other programs resident in an applications layer.
 - [c8] A power control system according to Claim 1 further comprising at least one IED configured with said Ethernet gateway.
 - [c9] A method for communicating with intelligent end devices (IEDs) in a power control management system including at least one IED, an Ethernet gateway,

and a control computer including an Ethernet server, said method comprising the steps of:
electrically connecting the Ethernet gateway to the Ethernet server;
configuring the server to create and encapsulate messages intended for IEDs in an industry standard format;
configuring the gateway to remove the encapsulation from received messages for transmission to the IEDs; and
transmitting the messages to the IEDs.

- [c10] A method according to Claim 9 wherein said step of configuring the server to create and encapsulate messages comprises the step of encapsulating messages with a TCP/IP Ethernet header and footer.
- [c11] A method according to Claim 10 wherein said step of configuring the gateway to remove the encapsulation from received messages comprises the step of configuring the gateway to extract the TCP/IP Ethernet header and footer from the encapsulated messages.
- [c12] A method according to Claim 11 further comprising the steps of:
configuring the gateway to encapsulate messages returned from the IEDs with an industry standard header and footer; and
transmitting the encapsulated messages to the Ethernet server.
- [c13] A method according to Claim 12 wherein said step of configuring the gateway comprises the step of encapsulating the messages with a TCP/IP Ethernet header and footer.
- [c14] A method according to Claim 9 further comprising the step of configuring the Ethernet server to act as a communications server for other programs resident in an applications layer.
- [c15] A computer programmed to create and encapsulate messages in an industry standard format, said computer further programmed to function as an Ethernet server for transmission of the messages.

- [c16] A computer according to Claim 15 further programmed to encapsulate messages with a TCP/IP Ethernet header and footer.
- [c17] An Ethernet gateway comprising a programmable hardware device configured to:
receive Ethernet messages from an Ethernet server in an industry standard format;
remove both an Ethernet header and footer from the received Ethernet messages, leaving a message for transmission to at least one intelligent end device (IED); and
transmit the messages to the at least one IED.
- [c18] An Ethernet gateway according to Claim 17 wherein the Ethernet header and footer are in a TCP/IP format.
- [c19] An Ethernet gateway according to Claim 17 wherein said programmable hardware device is further programmed to receive messages from intelligent end devices.
- [c20] An Ethernet gateway according to Claim 19 wherein said programmable hardware device is further programmed to:
encapsulate received messages with an Ethernet header and footer; and
transmit the encapsulated messages to an Ethernet server.
- [c21] An Ethernet gateway according to Claim 20 wherein the messages are encapsulated with a TCP/IP header and footer.